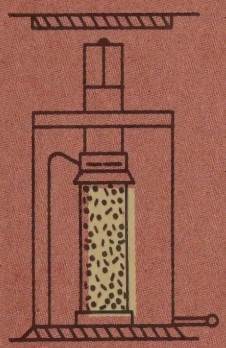
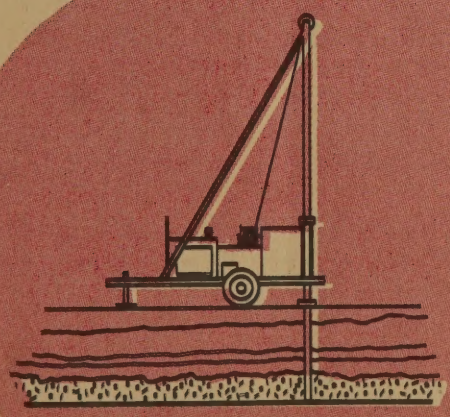
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

RAYMOND T. SCHULER, COMMISSIONER

SOIL MECHANICS BUREAU





TEST WELL REPORT
PORPOSED COMFORT STATION
N.B. I-81; CENTRAL SQUARE
CONTRACT D95473
OSWEGO COUNTY
PIN: 3500.79.111

OCTOBER 7, 1977

SM 238b (1/73)

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

DATE October 24, 1977

SUBJECT PIN 3500.97-111, D95473
NB REST AREA TEST WELLS, I-81
OSWEGO COUNTY

FROM L. H. Moore, Director, Soil Mechanics Bureau, Room 102, Bldg. 7
By: Edward M. Moody
TO A. Ditton, Landscaping Bureau, Room 408, Bldg. 5

cc J. M. Powers, Regional Director, Region 3
J. Sternbach, Construction Subdivision, Room 423, Bldg. 5

Enclosed is a memorandum prepared by Mr. Robert Bazarnick, Assistant Engineering Geologist, from this Bureau. The memorandum describes the problem encountered and the procedures necessary for the progression of the contract. Also enclosed is the test well data.

EMM/EJL/SAS
Encl.

NYSDOT
Library
50 Wolf Road, POD 34
Albany, New York 12232

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

DATE October 7, 1977

SUBJECT PIN: 3500.79.111; D95473
N.B. REST AREA TEST WELLS, I-81
OSWEGO COUNTY

FROM Robert J. Bazarnick, Assistant Engineering Geologist

TO Edward M. Moody, Associate Soils Engineer

On July 27, 1977, Mr. James Small, Region 3 Soils Engineer, contacted me by telephone and requested the aid of an Engineering Geologist from this Bureau to assist the E.I.C. of the subject project with problems that had arisen during the drilling of the first of the two wells.

On July 28, 1977, I arrived at the subject project and met with Mr. Steve Parry, Well Drilling Contractor, and Howard Wise, Project E.I.C. of Region 3. I was told that this well, designated as Well #2, had been drilled to a depth of 97 feet from the ground surface which is approximately 19 feet into rock. The well yielded 35 to 40 G.P.M. of water. However, the water had a high sulphur content as indicated by the strong sulphur smell and taste. I indicated to Mr. Wise and Mr. Parry that the construction of this well was contrary to the specifications set forth in the contract. The contract called for two wells drilled, screened and developed in the overburden.

At this time, I asked the driller to move his equipment from the site of Well #2 and set up on the site of Well #1 and proceed with the construction of the second well on this project. The Contractor agreed that drilling the second well at that time would be most beneficial in evaluating the construction of the first well.

The Contractor mobilized his equipment on the site of Well #1 on the afternoon of July 28, 1977, and construction of this well proceeded through the afternoon of July 29, 1977. Samples of the overburden material were taken every five (5) feet or where material characteristics changed to a total depth of 61 feet from the ground surface. I took the samples from Well #1 and the samples from Well #2 to the Region 3 Soils Laboratory in Syracuse where Mr. Small conducted sieve analyses on the samples. I then plotted the analyses as cumulative percent retained by each sieve size in order to ascertain the correct well screen slot size.

Mr. Frank Irving, Associate Engineering Geologist for this Bureau, and I analyzed this data and decided that Well #1 would best be completed by using 10 feet of #8 slot screen placed from 61-52 feet from the ground surface.

I contacted Mr. Wise, Project E.I.C., on August 2, 1977, and asked him to forward our screen size recommendations to the Contractor. Mr. Wise told me that he would contact me when the Contractor received the screen and was ready to install it in Well #1.

On August 9, 1977, Mr. Wise phoned me and said that the Contractor had received the screen as recommended and was ready to install it on the following day.

On August 10, 1977, I returned to the subject project. The Contractor placed the 10 foot length of #8 slot screen in the well and pulled the casing back so the bottom of the casing was 52 feet from ground surface. This exposed nine (9) feet of the screen from 61 to 52 feet from the ground surface. The lead packer was swedged tight to the casing and the Contractor began developing the well by alternately surging above the well casing and bailing the sand from the well screen. Development on Well #1 proceeded through August 17, 1977, when very little could be drawn through the screen during the surging and bailing process. This well was disinfected with two (2) gallons of chlorine bleach on August 18, 1977 so that proper testing and sampling could be conducted. The step drawdown test was conducted on August 25, 1977, by the Contractor. I told the Contractor that according to the grain size distribution of the samples taken from Well #2, a 10 foot long, #8 slot screen could also be used on Well #2. The Contractor agreed with the recommendation and ordered the screen.

On August 18 and 19, 1977, the Contractor attempted to pull back the casing on Well #2 so that the screen could be placed from 69 to 61 feet from the ground surface when it arrived. On the afternoon of August 19, 1977, the well casing broke 38 feet from the ground surface and the Contractor retrieved the top 40 feet of casing. I advised the Contractor to abandon Well #2 and move about 10 feet to the south of that site and construct a third well, Well #2-A, to a total depth of 69 feet and place the screen that he had ordered in that well from 69 to 61 feet from the ground surface.

On August 29, 1977, I returned to the subject project upon the request of Mr. Wise, Project E.I.C. The screen had been placed in Well #2-A from 69.5 to 61.9 feet from ground surface and the well had been developed and he was ready to chlorinate it for testing and sampling.

One of the two pumps that were used to test Well #1 was removed from that well and placed in Well #2-A. However, the Contractor could not remove the second pump which was placed at the bottom of the screen in Well #1. Mr. Wise and I assisted the Contractor in removing this pump from Well #1. After the pump was removed, the Contractor measured the depth of the well and found there was seven (7) feet of sand within the well screen.

The Contractor remobilized his drilling equipment on the site of Well #1 and bailed out the sand from within the well screen. The sand contained an abundance of grass, moss and other organic materials which indicated that someone put the sand into the well during the weekend of August 27, 28, 1977. Well #1 was chlorinated again so that samples could be taken from this well also.

On August 31, 1977, water samples were taken from both wells and these samples were taken to the New York State Department of Health Laboratory in Syracuse for analysis on September 1, 1977. However, a lab technician at that Health Department facility was unfamiliar with the sampling procedure and destroyed the samples.

The Contractor remobilized on the site of the subject project at the request of Mr. Howard Wise, E.I.C., on September 6, 1977. The Contractor reopened, resampled and resealed the two wells during that day. The samples were again taken to the New York State Department of Health Laboratory in Syracuse on September 6, 1977. This time they were accepted for analysis.

Due to the results of the pump tests, this Bureau recommends the following pump settings and pumping rates for the two wells:

Well #1 -- Pump setting 52 ft. from ground surface
Pumping rate 15 G.P.M.

Well #2A -- Pump setting 61 feet from ground surface
Pumping rate 20 G.P.M.

The logs of both completed wells, and the pump test results; and the bacteriological, chemical and physical analyses results are attached to this report.

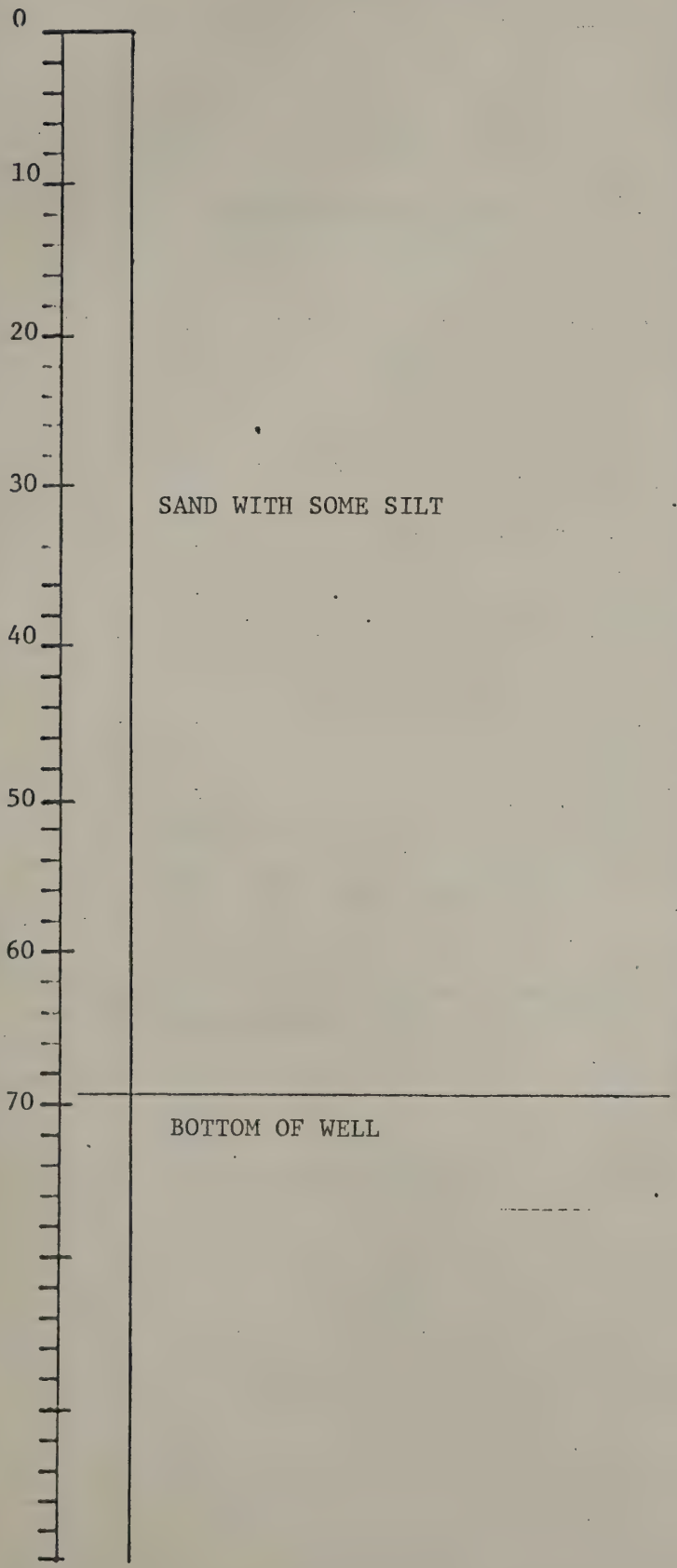
RJB:sd
Attachments

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

egion No. 3
ounty Oswego
roj. No. 3500.79.111
equesting Dept. DOT
roject N.B. Rest Area Test Wells Interstate Route 505

Test Well No. 2-A
Gr. Elev. Unknown
Location NB 825+08 Rt 335'

Depth, ft. Description



Date Start August 19, 1977
Date Finish August 29, 1977
Contractor Steve Parry
Driller Steve Parry
EIC Howard Wise
Inspector Robert Bazarnick
Rig Type Cable

Well Data

Hole Diam. 6 inch
Final Depth 69.5
Casing Diam. 6 inch
Casing Length 64.0 feet
Casing Above Ground 2 feet
Screen Type 10 foot-8 slot stainless
Screen Setting 69.5 - 61.9 ft.
Gravel Pack No
Grout No

Development 33 hours - surge and bail method

Test Data

Static Depth to Water 35.7
Pump Setting 68 feet from ground
Pumping Rate 5 - 21 GPM
Date and Duration 8/31/77 - 12 hrs.
Specific Capacity 1.7 GPM/Ft.

Recommendations

Pump Setting 61 ft. from ground
Pumping Rate 20 GPM

Remarks

Region No. 3
County Oswego
Proj. No. 3500.79.111
Requesting Dept. DOT
Project N.B. Rest Area Test Wells Interstate Route 505

State of New York
Dept. of Transportation
Soil Mechanics Bureau
TEST WELL LOG

Test Well No. 1
Gr. Elev. Unknown
Location NB 825+00
Rt. 235

Depth, ft.	Description
0 – 50	SAND WITH SOME SILT
50 – 60	SAND, SOME GRAVEL AND SILT
60 – 70	BOTTOM OF WELL

Date Start July 28, 1977
Date Finish August 17, 1977
Contractor Steve Parry
Driller Steve Parry
EIC Howard Wise
Inspector Robert Bazarnick
Rig Type Cable

Well Data

Hole Diam. 6 inches
Final Depth 61 feet
Casing Diam. 6 inches
Casing Length 54 feet
Casing Above Ground 2 feet
Screen Type 10 foot-#8 slot stainless
Screen Setting 61 - 52 feet
Gravel Pack No
Grout No

Development 39 hours - surge and bail method.

Test Data

Static Depth to Water 36 ft. 6 inches
Pump Setting 60 feet from ground
Pumping Rate 5.0 - 18.5 GPM
Date and Duration 8/23/77 - 12 hrs.
Specific Capacity 1.4 GPM/Ft.

Recommendations

Pump Setting 52 ft. from ground
Pumping Rate 15 GPM

Remarks

New York State Department of Transportation
Soil Mechanics Bureau

CONSTANT RATE PUMP TEST

Project: N.B. Rest Area Test Wells -- Interstate Route 505
Region 3 ; County Oswego ; PIN 3500.79.111
Date 8/31/77 ; Time Started 8:00 AM ; Pumping Rate 5-21 GPM
Pump Intake 68 below ground surface; Water temp. Unknown
Weather: Sunny

	Test Well	Observation Wells			Remarks
Hole No.	#2-A	-----	NONE ----	-------	
Ground Elev.	35.7				
Static level below ground					
Finished					
Time (min.)	Drawdown (from static level)				
5	3.1	5 GPM			
10	3.1	5 GPM			
15	3.1	5 GPM			
20	3.1	5 GPM			
25	3.1	5 GPM			
30	3.1	5 GPM			
* 35	2.7	5 GPM			*Moved outlet to 125' from the well
40	2.7	5 GPM			
45	2.7	5 GPM			
50	2.7	5 GPM			
55	2.7	5 GPM			
60	2.7	5 GPM			
75	2.7	5 GPM			
90	2.7	5 GPM			
105	2.7	5 GPM			
120	2.7	5 GPM			
135	2.7	5 GPM			
150	2.7	5 GPM			
165	7.2	10 GPM			
180	7.2	10 GPM			
195	7.2	10 GPM			
210	7.2	10 GPM			
225	7.2	10 GPM			
240	7.2	10 GPM			
270	7.2	10 GPM			
285	7.2	10 GPM			
300	10.0	15 GPM			
305	9.7	15 GPM			
310	9.7	15 GPM			
315	9.7	15 GPM			
320	9.7	15 GPM			
325	9.7	15 GPM			
330	9.7	15 GPM			
345	9.7	15 GPM			
360	9.7	15 GPM			
375	9.7	15 GPM			
390	9.7	15 GPM			

New York State Department of Transportation
Soil Mechanics Bureau

CONSTANT RATE PUMP TEST

Project: NB Rest Area Test Wells -- Interstate 505
Region _____ ; County _____ ; PIN 3500.79.111
Date _____ ; Time Started _____ ; Pumping Rate 5-21 GPM
Pump Intake _____ below ground surface; Water temp. _____
Weather: _____

	Test Well	Observation Wells			Remarks
Hole No.	#2-A cont.d	------	NONE ----	----	
Ground Elev.	Unknown				
Static level below ground	35.7				
Finished					
Time (min.)	Drawdown (from static level)				
405	9.7	15 GPM			
420	9.7	15 GPM			
425	11.5	21 GPM			
430	11.5	21 GPM			
435	11.5	21 GPM			
450	11.5	21 GPM			
465	11.5	21 GPM			
480	12.2	21 GPM			
485	12.2	21 GPM			
490	12.2	21 GPM			
495	12.2	21 GPM			
510	12.2	21 GPM			
525	12.2	21 GPM			
540	12.2	21 GPM			
570	12.2	21 GPM			
600	12.2	21 GPM			
630	12.2	21 GPM			
660	12.2	21 GPM			
690	12.2	21 GPM			
720	12.2	21 GPM			
735	12.2	21 GPM			
	END TEST				

New York State Department of Transportation
Soil Mechanics Bureau

CONSTANT RATE PUMP TEST

Project: N.B. Rest Area Test Wells -- Interstate Route 505
Region 3 ; County Oswego ; PIN 3500.79.111
Date 8/23/77 ; Time Started 8:00 AM ; Pumping Rate 5-18.5 GPM
Pump Intake 60' below ground surface; Water temp. Unknown
Weather: Sunny

	Test Well	Observation Wells			Remarks
Hole No.	#1	-----	NONE ----	-------	
Ground Elev.	Unknown				
Static level below ground	36.6'				
Finished					
Time (min.)	Drawdown (from static level)				
5	0	5 GPM			
10	3.2	5 GPM			
15	3.2	5 GPM			
20	3.2	5 GPM			
25	5.3	8 GPM			
30	5.3	8 GPM			
35	5.3	8 GPM			
40	5.3	8 GPM			
50	7.3	11 GPM			
55	7.3	11 GPM			
60	7.3	11 GPM			
65	7.3	11 GPM			
70	7.3	11 GPM			
75	8.3	13 GPM			
80	8.3	13 GPM			
85	8.3	13 GPM			
90	8.3	13 GPM			
95	8.3	13 GPM			
100	8.3	13 GPM			
105	8.3	13 GPM			
110	10.3	15 GPM			
115	10.3	15 GPM			
120	10.3	15 GPM			
*125	10.5	15 GPM			* Moved outlet from 60' to 160' from the well
130	10.7	15 GPM			
135	10.7	15 GPM			
140	10.7	15 GPM			
145	10.7	15 GPM			
150	10.7	15 GPM			
155	10.7	15 GPM			
160	10.7	15 GPM			
165	10.7	15 GPM			
180	10.7	15 GPM			
195	10.7	15 GPM			
210	12.0	17 GPM			
215	12.0	17 GPM			
225	12.0	17 GPM			

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH CENTER

RESULTS OF EXAMINATION
(PAGE 2 OF 2)

LAB ACCESSION NO: 02800 YR/MO/DAY/HR SAMPLE REC'D: 77/09/06/13

REPORTING LAB: 33 SYRACUSE LAB
PROGRAM: 820 NYS DEPT. OF TRANSP.
STATION (SOURCE) NO:
DRAINAGE BASIN: NY GAZETTEER NO: 3756 COUNTY: OSWEGO
COORDINATES: DEG ' "N, DEG ' "W
COMMON NAME INCL SUBW'SHED: REST AREA N. OF CENTRAL SQUARE, RT. 81

EXACT SAMPLING POINT: WELL 1-NEW DOT
TYPE OF SAMPLE: 16 PRIVATE SUPPLY, MISCELL.
MO/DAY/HR OF SAMPLING: FROM 00/00 TO 09/06/12
REPORT SENT TO: CO (1) RO (2) LPHE (2) LHO (0) FED (0) CHEM (0)

PARAMETER		UNIT	RESULT	NOTATION
00650	C.O.D.	MG/L	4.	
00401	FLUORIDE,FREE	MG/L	0.2	

DATE COMPLETED: 10/03/77

DEPUTY CHIEF ENGINEER,TECHNICAL SERVICES
NYS DEPT.OF TRANSPORTATION, BLDG. 7A
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226

SUBMITTED BY: HOFMANN

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH CENTER

RESULTS OF EXAMINATION

LAB ACCESSION NO: 02800 YR/MO/DAY/HR SAMPLE REC'D: 77/09/06/13

REPORTING LAB: 33 SYRACUSE LAB
PROGRAM: 820 NYS DEPT. OF TRANSP.
STATION (SOURCE) NO:
DRAINAGE BASIN: NY GAZETTEER NO: 3756 COUNTY: OSWEGO
COORDINATES: DEG ' "N, DEG ' "W
COMMON NAME INCL SUBW'SHED: REST AREA N. OF CENTRAL SQUARE, RT. 81

EXACT SAMPLING POINT: WELL 1-NEW DOT
TYPE OF SAMPLE: 16 PRIVATE SUPPLY, MISCELL.
MO/DAY/HR OF SAMPLING: FROM 00/00 TO 09/06/12
REPORT SENT TO: CO (1) RO (2) LPHE (2) LHO (0) FED (0) CHEM (0)

PARAMETER		UNIT	RESULT	NOTATION
309701	CADMIUM	MG/L	0.002	LT
309801	CHROMIUM	MG/L	0.01	LT
310101	LEAD	MG/L	0.01	LT
010001	IRON	MG/L	0.12	
010201	MANGANESE	MG/L	0.12	
000100	COLOR (APPARENT)		4.	
001900	PH (LABORATORY)		7.3	
001101	HARDNESS, TOTAL AS CACO3	MG/L	124.	
001001	CHLORIDE	MG/L	2.3	
000801	NITROGEN,NITRATE&NITRITE	MG/L	0.1	LT
009301	ARSENIC	MG/L	0.02	LT
000501	NITROGEN, AMMONIA	MG/L	0.06	

DATE COMPLETED: 10/03/77

DEPUTY CHIEF ENGINEER,TECHNICAL SERVICES
NYS DEPT.OF TRANSPORTATION, BLDG. 7A
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226

SUBMITTED BY: HOFMANN

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH CENTER

RESULTS OF EXAMINATION
(PAGE 2 OF 2)

LAB ACCESSION NO: 02801 YR/MO/DAY/HR SAMPLE REC'D: 77/09/06/13

REPORTING LAB: 33 SYRACUSE LAB
PROGRAM: 820 NYS DEPT. OF TRANSP.
STATION (SOURCE) NO:
DRAINAGE BASIN: NY GAZETTEER NO: 3756 COUNTY: OSWEGO
COORDINATES: DEG ' "N, DEG ' "W
COMMON NAME INCL SUBW'SHED: REST AREA N. OF CENTRAL SQUARE, RT. 81

EXACT SAMPLING POINT: WELL 2A-NEW DOT
TYPE OF SAMPLE: 16 PRIVATE SUPPLY, MISCELL.
MO/DAY/HR OF SAMPLING: FROM 00/00 TO 09/06/12
REPORT SENT TO: CO (1) RO (2) LPHE (2) LHO (0) FED (0) CHEM (0)

	PARAMETER	UNIT	RESULT	NOTATION
00650	C.O.D.	MG/L	4.	LT
00401	FLUORIDE,FREE	MG/L	0.2	

DATE COMPLETED: 10/03/77

DEPUTY CHIEF ENGINEER,TECHNICAL SERVICES
NYS DEPT.OF TRANSPORTATION, BLDG. 7A
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226

SUBMITTED BY: HOFMANN

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH CENTER

RESULTS OF EXAMINATION
(PAGE 1 OF 2)

AB ACCESSION NO: 02801 YR/MO/DAY/HR SAMPLE REC'D: 77/09/06/13

EPORTING LAB: 33 SYRACUSE LAB
ROGRAM: 820 NYS DEPT. OF TRANSP.
TATION (SOURCE) NO:
RAINAGE BASIN: NY GAZETTEER NO: 3756 COUNTY: OSWEGO
OORDINATES: DEG ' "N, DEG ' "W
OMMON NAME INCL SUBW'SHED: REST AREA N. OF CENTRAL SQUARE, RT. 81

XACT SAMPLING POINT: WELL 2A-NEW DOT
YPE OF SAMPLE: 16 PRIVATE SUPPLY, MISCELL.
O/DAY/HR OF SAMPLING: FROM 00/00 TO 09/06/12
EPORT SENT TO: CO (1) RO (2) LPHE (2) LHO (0) FED (0) CHEM (0)

	PARAMETER	UNIT	RESULT	NOTATION
09701	CADMIUM	MG/L	0.002	LT
09801	CHROMIUM	MG/L	0.01	LT
10101	LEAD	MG/L	0.01	LT
10001	IRON	MG/L	0.35	
10201	MANGANESE	MG/L	0.02	LT
00100	COLOR (APPARENT)		5.	
01900	PH (LABORATORY)		7.3	
01101	HARDNESS, TOTAL AS CACO3	MG/L	60.	
01001	CHLORIDE	MG/L	1.0	
00801	NITROGEN,NITRATE&NITRITE	MG/L	0.1	LT
09301	ARSENIC	MG/L	0.02	LT
00501	NITROGEN, AMMONIA	MG/L	0.02	LT

ATE COMPLETED: 10/03/77

DEPUTY CHIEF ENGINEER,TECHNICAL SERVICES
NYS DEPT.OF TRANSPORTATION, BLDG. 7A
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226

SUBMITTED BY: HOFMANN

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH CENTER

RESULTS OF EXAMINATION
(PAGE 1 OF 1)

LAB ACCESSION NO: 26812 YR/MO/DAY/HR SAMPLE REC'D: 77/09/06/16

REPORTING LAB: 30 SYRACUSE LAB
PROGRAM: 820 NYS DEPT. OF TRANSP.
STATION (SOURCE) NO:
DRAINAGE BASIN: NY GAZETTEER NO: 3756 COUNTY: OSWEGO
COORDINATES: DEG ' "N, DEG ' "W
COMMON NAME INCL SUBW'SHED: U

EXACT SAMPLING POINT: WELL 2A-NEW DOT REST AREA-N, CENTRAL SQ,-81
TYPE OF SAMPLE: 16 PRIVATE SUPPLY, MISCELL.
MO/DAY/HR OF SAMPLING: FROM 00/00 TO 08/06/12
REPORT SENT TO: CO (1) RO (2) LPHE (2) LHO (0) FED (0) CHEM (0)

	PARAMETER	UNIT	RESULT	NOTATION
026800	STD.PLATE COUNT 48 HR /ML		880.	
027000	COLIF. MF COL/100ML		1.	LT

DATE COMPLETED: 9/09/77

DEPUTY CHIEF ENGINEER,TECHNICAL SERVICES
NYS DEPT.OF TRANSPORTATION, BLDG. 7A
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226

SUBMITTED BY: HOFMANN

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH CENTER

RESULTS OF EXAMINATION
(PAGE 1 OF 1)

LAB ACCESSION NO: 26811 YR/MO/DAY/HR SAMPLE REC'D: 77/09/06/16

REPORTING LAB: 30 SYRACUSE LAB
PROGRAM: 820 NYS DEPT. OF TRANSP.
STATION (SOURCE) NO:
DRAINAGE BASIN: NY GAZETTEER NO: 3756 COUNTY: OSWEGO
COORDINATES: DEG ' "N, DEG ' "W
COMMON NAME INCL SUBW'SHED: U

EXACT SAMPLING POINT: WELL 1=NEW DOT REST AREA=N. CENTRAL SQ.=81
TYPE OF SAMPLE: 16 PRIVATE SUPPLY, MISCELL.
MO/DAY/HR OF SAMPLING: FROM 00/00 TO 09/06/12
REPORT SENT TO: CO (1) RO (2) LPHE (2) LHO (0) FED (0) CHEM (0)

	PARAMETER	UNIT	RESULT	NOTATION
026800	STD.PLATE COUNT 48 HR /ML		320.	EE
027000	COLIF. MF COL/100ML		1.	LT

DATE COMPLETED: 9/09/77

DEPUTY CHIEF ENGINEER,TECHNICAL SERVICES
NYS DEPT.OF TRANSPORTATION, BLDG. 7A
1220 WASHINGTON AVENUE
ALBANY, N.Y. 12226

SUBMITTED BY: HOFMANN

00988
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